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Amendments to Claims:

Please amend the claims as in the following listing:

- 1 1. (Currently amended) A magnetic head comprising:
2 a read sensor which is of Current Perpendicular to the Plane (CPP) configuration
3 including:
4 at least one primary pinned layer;
5 a barrier layer;
6 a free layer;
7 an in-stack biasing structure having net magnetic moment $dM=0$ which is
8 substantially equal to zero, which acts to stabilize said free layer by exchange
9 coupling.
- 1 2. (Original) The magnetic head of claim 1, wherein:
2 said in-stack biasing structure includes paired layers of opposite magnetic
3 orientation which are separated by a spacer layer, such that the net magnetic moment of
4 said paired layers is substantially zero.
- 1 3. (Currently amended) The magnetic head of claim 1, wherein:
2 said $dM=0$ net magnetic moment substantially equal to zero corresponds to a dT
3 difference in thickness of said paired layers of opposite magnetic orientation which is less
4 than 5×10^{-10} meters, where magnetic thickness $T = M \times t$, and M equals magnetization, t
5 equals thickness of material, and dT is the differential in the layer thicknesses.
- 1 4. (Original) The magnetic head of claim 1, wherein:
2 said in-stack biasing structure includes a self-pinned layer pair.
- 1 5. (Original) The magnetic head of claim 1, wherein:
2 said at least one primary pinned layer includes a pair of primary pinned layers,
3 separated by a spacer layer.
- 1 6. (Original) The magnetic head of claim 5, further comprising:
2 at least one layer of AFM material which acts to pin said pair of primary pinned
3 layers.
- 1 7. (Original) The magnetic head of claim 5, wherein:
2 said pair of primary pinned layers are self-pinned layers.
- 1 8. (Canceled)
- 1 9. (Currently amended) A disk drive comprising:
2 at least one hard disk;
3 at least one magnetic head adapted to fly over said hard disk for writing data on
4 said hard disk, and having an air bearing surface, said magnetic head including:

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5 a read sensor which is of Current Perpendicular to the Plane (CPP)
6 configuration including:

7 at least one primary pinned layer;

8 a barrier layer;

9 a free layer;

10 an in-stack biasing structure having net magnetic moment which is
11 substantially equal to zero $dM=0$, which acts to stabilize said free layer by
12 exchange coupling.

1 10. (Original) The disk drive of claim 9, wherein:

2 said in-stack biasing structure includes paired layers of opposite magnetic
3 orientation which are separated by a spacer layer, such that the net magnetic moment of
4 said paired layers is substantially zero.

1 11. (Currently amended) The disk drive of claim 9 ~~10~~, wherein:

2 said net magnetic moment substantially equal to zero $dM=0$ corresponds to a
3 difference in thickness of said paired layers of opposite magnetic orientation which is dT
4 less than 5×10^{-10} meters, where magnetic thickness $T = M \times t$, and M equals
5 magnetization, t equals thickness of material, and dT is the differential in the layer
6 thicknesses.

1 12. (Original) The disk drive of claim 9, wherein:

2 said in-stack biasing structure includes a self-pinned layer pair.

1 13. (Original) The disk drive of claim 9, wherein:

2 said at least one primary pinned layer includes a pair of primary pinned layers,
3 separated by a spacer layer.

1 14. (Original) The disk drive of claim 13, further comprising:

2 at least one layer of AFM material which acts to pin said pair of primary pinned
3 layers.

1 15. (Original) The disk drive of claim 13, wherein:

2 said pair of primary pinned layers are self-pinned layers.

1 16. (Canceled)

1 17. (Canceled)

1 18. (Canceled)

1 19. (Canceled)

1 20. (Canceled)

1 21. (Canceled)